

# **S<sup>3</sup>H Working Paper Series**

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## **Preferences for Truthfulness: An Experimental Analysis**

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January 2020

School of Social Sciences and Humanities (S<sup>3</sup>H)  
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## **S<sup>3</sup>H Working Paper Series**

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## **Preferences for Truthfulness: An Experimental Analysis**

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## **Abstract**

This study aims to analyze the economic decision of lying in an attempt to evaluate the factors that cause heterogeneity in preferences for truthfulness among and within the individuals. The results are obtained from the sample of young university students of Islamabad, using Cheap-talk sender receiver game. The study concludes that people can't be categorized into two types, i.e. 'Economic' (those who always lie when benefits of lying outweigh its costs) and ethical (those who never lie), rather there is a third kind of those who partially lie. Furthermore, our model predicts that people indulge in partial lying on account of an urge to maintain a positive self-concept. Role of self-concept maintenance in explaining truthfulness is more evident, if the respondents are communicated that their decision to lie will be disclosed to their partner. 'Shame' and 'Religion Priming' play significant role in curbing lying behavior. Moreover, Shame and religion priming positively interact with small impact of self-concept maintenance to instigate truthfulness to a greater extent.

*Keywords: Lying, Incomplete Lying, Self-concept Maintenance, Shame, Religion*





## 1. Introduction

Asymmetric information is a common aspect in many market settings, which enables the attitude of misreporting the information in order to gain one's self-interest. Practices such as cheating on taxes, deceiving in interpersonal relationships, overstating performance and contributions to teamwork, inflating business expense reports and lying in negotiations are the prevalent practices at market place. Moreover, dishonesty plays a major role in failing economies (Mazar *et al.*, 2008). Economic theory of Crime and Punishment by Gary Becker (1968) suggests that dishonesty is caused by deliberate tradeoff between its expected external benefits and costs. Therefore, individuals are honest or dishonest only to the extent that the expected trade-off favors particular action (Hechter, 1990; Lewicki, 1983). Bhide and Stevenson (1990) suggest that there are no intrinsic costs of lying. People are selfish and lying *in itself* does not incur any cost. (Crawford & Sobel, 1982) This assumption seemingly gives an impression that every individual is identical, with no distinction in economic motives.

On the contrary to Economic philosophy, behavioral economics suggests that decisions about lying, like most other decisions, may not always be based on conventional cost-benefit analysis. Rather, forces that govern truthfulness are much more complex. Lying behavior tends to change as circumstances change, undermining consistency over time and context. This lack of consistency is not a fault; rather, it is a remarkable defining capacity that allows individuals to engage in complex social situations. Peoples' preferences are neither constant nor stable (Roberts *et. al.*, 2017). There are people in different professions who jeopardize their careers just to maintain their honesty (Treviño and Brown, 2004). Such deviation from rational behavior occurs because some people contemplate the same monetary outcome differently depending on the procedure that leads up to it (Gneezy, 2005). Hence, agents exhibit continuously heterogeneous preferences for truthfulness, and therefore, people can't be attributed to being only Economic (Liar) or even Ethical (Truthful) (Gibson *et. al.*, 2013), as morality is dynamic and malleable, rather than being a stable trait that characterizes individuals i.e., individuals do not behave consistently across different situations, even when they strongly value morality or when they see being an ethical person as central to their self-concept (Monin & Jordon, 2009).

Psychological perspective suggests that heterogeneity in preferences for truthfulness is due to the fact that inputs involved in cost-benefit analysis are not limited to just external rewards and punishment. Internal rewards are the vital determinants of decision to be honest or dishonest. Campbell (1964) suggests that it's a part of socialization that people tend to internalize the norms and

values of the society they live in. According to Freud (1933), accumulation of this internalization process is known as “super-ego”. Hence, if an individual is able to comply with his super-ego, he will get positive utility, while noncompliance will lead to negative internal reward for oneself. The impact of positive and negative external reward on one’s self-perception will determine the importance of these rewards (Aronson, 1969; Bem, 1972; Baumeister, 1998). The inclusion of internal rewards in the cost benefit analysis of lying decision explains why people tell the truth even when it is favorable for them to lie.

In an attempt to relate psychology of human mind to the economic decisions, the paper analyzes the utility function that an economic agent comes across while making a decision to lie. We examined whether people exhibit only extreme behaviors (always lying or always telling the truth) or display a spectrum of preferences for truthfulness. The paper shows that there are intrinsic costs of lying; these costs of lying change the dynamics of standard economic models in such a way that types of lies become much wider. The complexity of these costs creates a wide spectrum of types of lying. In a broader perspective, it is not a matter of complete lie (always lying irrespective of monetary payoffs) or complete truth (always telling the truth irrespective of monetary payoffs), rather people indulge in incomplete lies as well, i.e. lying only when monetary benefit is high enough or lying only when monetary benefit lie is low. The additional input from the paper is finding out the role of shame and religious reinforcement in encouraging people to be truthful. Cheap-talk sender receiver (CTSR) game is employed to address the two issues. Firstly, identifying individuals’ lying behavior on a personal choice spectrum, secondly, analyzing the role of ‘Self-Concept Maintenance’, ‘Shame’ and ‘Religious Reinforcement’ in increasing the rate of truthfulness in people. Remainder of the paper is as follows. Section two of the paper highlights an overview of the earlier conclusions on the topic of economic decision of lying. Section three of the paper outlines the theoretical framework of the employed experiment. Results deduced from the experiment are discussed in section four. Finally, paper is concluded in section five.

## **2. Literature Review**

Recent literature has grown in terms of evaluating peoples’ behavior towards lying and the motivations that curb the lying behavior. Initial studies related to pure economic theory of rationality acknowledge only the external factors that contribute towards curbing lying behavior in people. Lewicki (1983) states that a ‘rational’ agent regards only the material payoff while making a decision

to lie. He is less likely to incur any intrinsic cost of lying. Increasing attention towards behavioral economics has led researchers to focus on ‘unconventional’ factors that can shape human behavior. Several studies such as Gneezy (2005), Gibson *et al.* (2013), and Fischbacher and Föllmi-Heusi (2013) suggest that due to intrinsic cost of lying, there is a proportion of people who indulge in honest conduct even when it is in their favor to lie.

Literature mainly uses two approaches to study lying behavior. The first approach uses Cheap Talk Sender Receiver (CTSR) game, also known as deception game. This game involves participation of two players, sender and receiver. Sender is given the opportunity to misreport the true state of the world for his own benefit. Receiver, who is oblivious of state of the world, has the choice to believe or not believe the sender. Ultimately, choice preferred by receiver will determine the final outcome for both the players. This approach was first adopted by Gneezy (2005), following his experiment, Sutter (2008), Dreber & Johannesson (2008), and Erat and Gneezy (2010) to study lying behavior. The second approach to study lying behavior uses cheating game. The main distinction between the former and latter method is that latter does not take into account the strategic behavior and social preferences of decision maker. Hence, the outcome of cheating game is not determined by the receiver’s choice, but it would be a direct result of what the sender chooses to send. Moreover, the participants are not identified as sender or receiver, the design itself is such that lying behavior of all participants are judged based on the statistical comparison of required criteria of the test under the controlled and uncontrolled settings. Prominent studies highlighting the cheating game are conducted by Mazar *et al.*, (2008) and Fischbacher and Föllmi-Heusi (2013). Regardless of the type of approach used, literature acknowledges the distinction in lying costs for each individual, leading to heterogeneity in preferences for truthfulness. This heterogeneity means diversity in the types of lies; including complete or maximum lying (always lying), and partial or justified lying (lying only under specific circumstances).

## **2.1. Factors behind Partial Lying**

### ***Self-Concept Maintenance***

Mazar *et al.* (2008) propose theory of self-concept maintenance which states that an individual does not necessarily exhibit dishonest conduct entirely but can indulge in unethical conduct to some extent, thereby maintaining a positive image about himself, while profiting from external rewards at the same time. Further findings from the experiment suggest that the degree of dishonesty is independent of external factors. Moreover, awareness about internal moral standards decreases the

level of deceptive behavior (Mazar, Amir & Ariely, 2008). The theory of self-concept maintenance is originated from the theory of cognitive dissonance, suggested by Festinger (1957). The theory is built upon the notion that individuals strive towards consistency between their beliefs and actions. The theory was further improved and advanced by Aronson (1969) who emphasized the role of self-concept in the arousal of dissonance. According to him, discord is awakened when a person performs a behavior that is inconsistent with his or her sense of self (i.e., what he or she believes about him or herself). To reduce dissonance, individual starts indulging in self-justification. Ultimately, individual through justification or changing his attitude is able to build a self-image that is stable and morally good.

Mazar *et al.* (2008) have adopted second approach to study lying behavior and designed an experiment in which participants were asked to fill a sheet consisting of 50 MCQs of general knowledge. At the end of experiment, they were paid based on their correct responses. This experiment was repeated four times, each time the probability of being caught from cheating was decreased. In the controlled treatments, participants were asked to self-report their answers after shredding their answers sheet, as to prevent any kind of verification of self-reported number of correct answers. At the end of experiment, it was found out that in the treatment in which there was no scrutiny, participants performed better. This approach has two prominent drawbacks. Firstly, since the experimenter does not know whether a given participant lied, the implication made is not based on separate individual responses but rather on group frequency distribution. Secondly, there is a possibility that true responses of respondents are not captured because the victim of the lies is not another respondent but the experimenter. The identity of experimenter might affect decision making. Thirdly, the difference in performance level might be due to difference in ability or motivation level of the participant. Our study proposes solution to all these shortcomings as individual level responses are obtained by evaluating sender's messages sent to their receivers. Secondly, the sender's payoff depends on the receiver's decision and the victim of the lie is not the experimenter but the receiver of the message.

Fischbacher and Föllmi-Heusi (2013) have also contributed to testify the validity of incomplete lying by making use of 'dice under the cup' experiment. Here, the participants were given the opportunity to earn money on the basis of self-reported dice roll. The study presents the findings that 20% of the times subjects are fully dishonest, and 39% of the times they are completely honest. Furthermore, large proportion consists of partial liars. They indulge in incomplete lying by not reporting the maximum payoff. Just like Mazar *et al.* (2008), Fischbacher and Föllmi-Heusi (2013)

attribute partial lying to self-concept maintenance. Other reason of incomplete lying according to researchers is non anonymous nature of experiment.

### ***Incentives***

Gneezy, Rockenbach & Serra-Garcia (2013) in their paper have used cheap-talk sender receiver game to study the lying behavior. The study identifies participants into the categories of those who always lie, those who never lie and those whose behavior changes with the amount of incentives. However, the shortcoming of the method applied in their paper is that participants' identity is not kept anonymous. This may lead to participants evoking behavior that is more compliant to social norms.

### ***Justified Lying***

In an attempt to test the hypothesis that there is a monotonic increase in lying with increased incentives, Shalvi *et al.* (2011) have used 'die-under the-cup' concept. The results indicated that majority of the times, numbers on die roll were not over-reported when there were financial motivations with no detection for lying. However, participants did lie to some degree. Shalvi *et al.* (2011) further elaborate that lying pattern of people depend on their willingness to make moral compromises. To back up the theory, experiment was setup where students were asked to gain points not for themselves but for charity. The findings of this setup revealed that incentive to donate to charity encourages dishonesty, hence indicating that people justify lying under some circumstances. Overall, study by Shalvi *et al.* (2011) demonstrated that psychologically it is not discretely possible to differentiate between rights and wrong, however it is continuous scale of 'rightness' and 'wrongness' in relative terms. In an attempt to replicate the results of Shalvi *et al.* (2011), Lewis *et al.* (2012) have conducted the similar experiments with almost similar results. Moreover, the study signifies the individual differences and concludes that economics students were much more likely to exhibit lying behavior than psychology students.

### ***Appearing Honest***

Hao and Houser (2010) have also proposed a proposition explaining why people tell the truth even when it is against their self-interest. In their experimental setup, participants were asked to report the unsupervised dice roll after predicting the number they will roll. Eventually, accuracy of predictions about the outcome of dice is rewarded. Thus, giving an opportunity to participants to self-report the dice roll outcome consistent with their predictions. However, it was suggested from findings that participants misreported the actual dice roll outcome in order 'not to conform' with the predicted

number. This finding suggested that people might appear to act honest without being actually honest. With an attempt to differentiate peoples' preferences for appearing honest and actually being honest, it was found that 95% express a preference for appearing honest, while only 44% are actually honest in their actions when they have an opportunity to cheat. These results propose a concept that "incomplete cheating" behavior recurrently mentioned in the literature can be attributed more to a preference for maintaining appearances than an intrinsic aversion to maximum cheating. The notable drawback of the method 'dice under the cup paradigm' is that results and conclusions are based on statistical distributions of a uniform fair dice. This approach leads to inferences that are more general and not based on the individuals' preferences for lying.

## **2.2. Factors that Promote Truthfulness**

### ***Guilt and Shame***

Battigalli and Dufwenberg(2009) and Tadelis(2011) define shame as a feeling that emerges as a result of not being perceived desirable by others. According to Lewis (1971), besides situations of encounter with others, feeling of shame may also be invoked in private. Greenberg *et al.* (2014) used Gneezy (2005) deception game to identify guilt and shame as potential factors explaining individual's aversion to lying. The study reported that shame played better role in encouraging people to indulge in honest behavior as compared to guilt. Current paper is different from the paper of Greenberg *et al.* (2014) in three ways. Firstly, our paper is investigating factors that are belief independent. Greenberg *et al.* (2014) test for guilt by inducing senders' beliefs about receivers' expectations of their payoff. The choices made by senders, after knowing the monetary expectations of receivers, would be guilt driven. These beliefs about monetary expectations of receivers are not induced in the current paper so that the guilt factor does not infiltrate the impact of other factors. Secondly, our study is testing for the impact of self-concept maintenance, shame without reputational concerns and religious reinforcement. Thirdly, we have classified types of respondents based on their personal choices in each treatment.

### ***Social Image***

Besides an urge to maintain a positive self-image, social image also plays role in inculcating honest behavior even when it is economically beneficial to lie. There are several studies that acknowledge the general concept of public fear as a determinant in fostering behavior that is compliant to social norms. Andreoni and Bernheim (2009) and Ariely *et al.* (2009) find that individuals are more

generous when their contributions are made public. Bateson *et al.* (2006) also established the positive relationship of generosity and social pressure. Bénabou and Tirole (2006), Cappelen *et al.* (2013), Della Vigna *et al.* (2012), Ellingsen and Johannesson (2008), Hao and Houser (2010) also acknowledge the significance of reputational concerns in shaping the prosocial behavior of people.

### ***Religion***

There is considerable amount of literature that acknowledges the role of religion in shaping economic decision of people. Hamdani *et. al* (2004) has proposed a premise, in contrast with the conventional economics, stating that an economic agent takes into account consequences of his decisions in the present life and life after death. Hence, an individual would maximize his utility of this life as well as the afterlife. This theory explains why people choose to spend money and time where there is no monetary return for them. However, participation in voluntary contribution varies from person to person, depending on how much an individual weighs utility of hereafter against the utility of this life.

Barro and McCleary(2003) are of the view that religion plays significant role in promoting social interaction, cooperation and economic growth. Iannaccone (1998), Ruffle and Sosis (2007), Eckel and Grossman (2003) and Ahmad (2009) establish that there exists a relationship between religiosity and economic behavior. Lipford *et al.* (1993) says that ethics reinforced by religion aid the economy in reducing crimes. Shariff and Norenzayan (2007) establish in their study that religion encourages and promotes prosocial behavior. Studies focused on psychological experiments have demonstrated that activating instantaneous religious thinking in the moment can encourage prosocial behavior. Hence, even though, in some studies, trait of religiosity is found to be unrelated to generosity, obliquely priming religious thoughts is found to foster generosity in anonymous economic games (Ahmed & Salas, 2008; Shariff & Norenzayan, 2007). Newton and McIntosh (2009), and Pichon *et. al.* (2007) have also concluded that priming of religious teachings can activate prosocial concerns. Religion facilitates costly behaviors that benefit other people. Experimentally induced religious thoughts decrease the rate of cheating and intensify altruistic behavior among anonymous strangers (Norenzayan & Shariff, 2008). Religion also plays an important role in inculcating coping mechanism and motivation among people (Weisbuch-Remington *et al.*,2005).

Although literature is silent about the particular relationship of lying and religiosity, there are few studies that adopt the simpler methods to analyze honesty and its relation with religiosity. Randolph-Seng and Nielsen (2007) reveal in their study that students primed with religious representations do not frequently exhibit dishonest conduct. In an attempt to investigate the link

between a person's religiosity and his honesty, a study by Yu *et al.* (2016) examined the relationship of religious identity, affirmation of importance of religious services and attendance in religious gatherings with academic honesty among college students. A sample of 2503 American college-aged students was collected through surveys and the research concluded that participants who attended religious seminars were less likely to exhibit academic dishonesty.

The problem with such simplistic approach to study dishonesty, where participants are simply asked about their attitude towards dishonesty, or are asked moral reasoning questions through test, is that only revealed preferences are recorded. Hence, our study overcomes this shortcoming by implementing a well-structured experiment that enables the experimenter to deduce unrevealed preferences of individuals towards lying upon religious reinforcement.

In an attempt to capture unrevealed preferences on religion priming, Aveyard (2014) conducted two experiments with middle-eastern participants. Participants were first divided into two groups. In the experiment one, the first group of participants was asked to complete sentence unscrambling task with religious content, other group was asked to complete the task with non-religious content. Afterwards, participants were made to take an unsupervised and incentivized math test. Results of first experiment showed that there was no statistical difference between marks of both the groups. In the experiment two, impact of *Azān*, the Islamic call to prayer was tested using the same design. Results inferred that religious primed individuals had higher rates of honesty as compared to the other group.

Shariff and Norenzayan (2011) have used computer-error task to conduct correlational study on religious beliefs and cheating. The study concludes that inculcating fear of God may help in reducing dishonesty among people, with factors such as social fear being controlled.

Above mentioned papers, except for Shariff and Norenzayan (2011), use the second approach to study lying behavior. The notable drawback of these studies is that experimenter is not aware of the individual's behavior. The results simply show the difference between performance of participants under the conditioned religious priming and without religious priming. Other factors such as intelligence, academic background, which can also possibility contribute towards the difference in performance level, is not controlled for. Hence, credibility of such inferences may be questionable.

The religious affiliations extensively discussed in literature include individuals' beliefs, their adherence to religious practices, their knowledge about religion etc. Our study has used religion priming in order to analyze the impact of religious reminders on people's decision of lying. Psychological theory of self-categorization by James (1890) and Turner (1985) has been used as a



foundation for priming in this research. The theory states that priming a certain identity can momentarily increase the strength of affiliation with that identity. Reinforcement causes a person to shift behavior towards the reinforced identity. Hence, priming religious identity would temporarily increase the strength of affiliation with that religious identity. Leboeuf *et al.* (2010), Reicher and Levine (1994) and Forehand *et al.* (2002) have also tested the theory of self-categorization. Bargh *et al.* (1996) also propose the theory of behavioral-priming. According to them, spiritual beings such as “God” and “Prophet” can refer to moral actors associated with acts of prosocial behavior. Bering (2006) and Boyer (2001) suggest that religious priming can reinforce commitment towards God, this perception can ultimately encourage ethical behavior.

This study is different from previous studies in three aspects. Firstly, using the game of CTSR, and introducing the high and low stakes, not only self-concept maintenance theory is tested but also individual’s dishonest behavior is categorized on a personal choice spectrum. Secondly, based on different dimensions of religiosity, such as belief in God, belief in the life hereafter, rituals, salvation and religious experiences, studies examine the link between religion and economic behavior in a variety of games, including variants of the dictator, ultimatum, trust and public- good games. But there is no study that has used deception game to analyze the impact of religious reinforcement and self-image on lying behavior. Lastly, the descriptive analysis of each determinant of truthfulness depicted in this study is one of a kind, thorough, well thought and systematic.

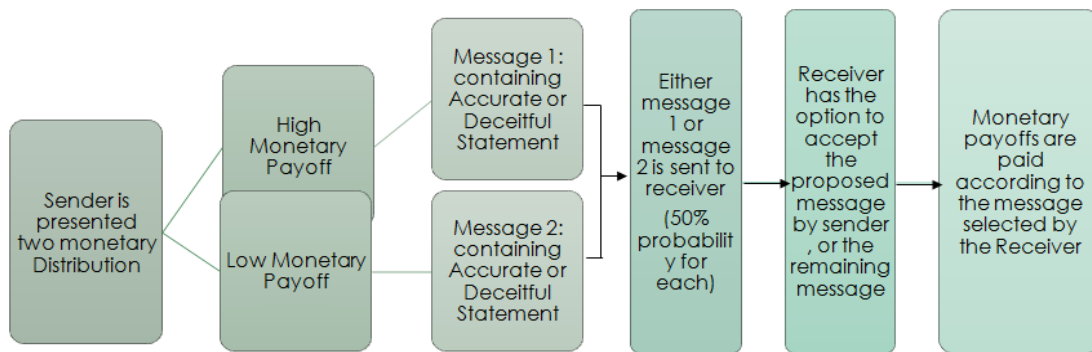
### **3. Methodology**

#### **3.1. Theoretical Background**

To analyze the determinants of lying, we use a revised version of the Cheap-Talk Sender-Receiver (CTSR) game, also known as Deception Game proposed by Gneezy (2005). CTSR game is a signaling game of two players, categorized as dynamic game of incomplete information. In this two-player communication game, each player is assigned role of either ‘Sender’ or ‘Receiver’ as shown in figure 1. An anonymous one-shot game is played by the players. The sender can truthfully or inaccurately pass on a message to the receiver about the given situation, which only he is aware of. In the basic game, two possible monetary distributions (high stake and low stake) are presented which are known only by the sender. However, rules are communicated to both the players. The sender would decide whether to send a truthful message or inaccurate message in both the monetary payoff situations which are designed such that the sender has an opportunity to increase his monetary payoff

by misreporting the situation. First, the sender sends two messages for two payoff scenarios, then the random selection decides which payoff scenario is implemented before forwarding this message to the receiver. Hence, the receiver will observe only one message from the sender. In the original game, the receiver cannot discern if the sender lied or not. If the receiver accepts the sender’s reported state of the world as true description of the situation, while the sender lied in the message, the receiver gets lower pay-off and the sender is better off. Whereas, if the receiver does not accept the message of sender, the sender receives lower payoff than the receiver.

Figure 1. Game Design



### 3.1. The Game Played

In our Experimental analysis, Player 1 is asked to send one of the two possible messages to player 2:

Message A: “Option A will earn you more money than option B.”

Message B: “Option B will earn you more money than option A.”

The sender is asked to send messages for two possible sets of payoffs, high stake and low stake as shown in table 1. Each payoff stake is likely to occur with equal probability; i.e., 50%.

Table 1. Payoffs used in Deception Game

Stakes	Option	Payoff to	
		Sender	Receiver
High	A	1100	1100
	B	1500	700
Low	A	550	550
	B	750	350

30 Experimental Units=1Rs

Payoffs are constructed in such a manner that if option A is chosen, sender earns equal to receiver, indicating fair distribution. If option B is chosen, sender earns more at the expense of receiver, indicating the real-life scenario where people exploit the fair situation by lying for personal benefit.

### **3.2. Experiment Treatments**

There are three treatments in the experiment. One is categorized as the baseline treatment (BT) and the other two as Shame treatment (ST) and Religion Treatment (RT).

**Baseline Treatment (BT):** The sender sends a message and receivers makes his choice to treat this message as true or false. The receiver is not informed whether sender sent him true or false message.

**Shame Treatment (ST):** the sender is informed that the receiver will be told at the end of the game whether the sender forwarded him true or false message

**Religion Treatment (RT):** the instruction manual of sender includes religious commandments about the prohibition of lying and he is supposed to read them before sending the message.

Thus, we trace the effects of shame and religion priming on senders' lying behavior.

### **3.3. Participants**

The study is based on primary data that we collected from three universities of Islamabad including NUST, COMSATS and NUML. 202 students are randomly chosen, 101 are selected for the role of 'senders', and 101 for being 'receivers. Identity of senders and receivers was kept anonymous from each other as disclosure of identity might have resulted in behavior complying with the social norms. Economics, English and Business studies are the majors studied by the sample students. Sample consists of 46.53% females and 53.47% males. Furthermore, age of the respondents varies from 18 to 23 years.

## **4. Results and Discussion**

### **4.1. Preferences for Truthfulness under High and Low stake**

#### **4.1.1. Classification of Behaviors**

To examine if respondents are indulging in 'incomplete lying', we examine peoples' preferences towards lying under low and high stakes. This classification helped to find out if people

occupy a spectrum of preferences for truthfulness. Given the opportunity to lie under high and low monetary stakes, an individual can either choose to lie in both stakes, or in either of the two stakes, or in none of the stakes. If an individual lies in both the stakes, he falls into the category of ‘Economic’ (lying as long as monetary benefit is greater than monetary cost). If he lies in none of the stakes, then he would fall into the type ‘Ethical’ (never lying). Lying in low stake is attributed to individual’s urge to maintain a positive view of oneself while benefiting from monetary reward (Mazar *et al.*, 2008). Lying in high stake is ascribed to opportunism (lying when benefit is high enough). This classification is shown in Table 2.

Table 2. Respondents’ Lying Behavior under High and Low Monetary Payoffs

		High Stake	
		Truth	Lie
Low Stake	Truth	Ethical Ethically strong people never lie, even a little bit of lying will result into infinite disutility. Koford and Penno (1992)	Opportunist Lying only when benefit is high enough Theory of Pragmatism (Peirce, 1870)
	Lie	Upholding positive self-image Theory of self-concept maintenance: benefiting from external benefits of lying, while maintaining positive view of oneself in terms of being honest individuals. (Mazar <i>et al.</i> , 2008). Cognitive dissonance Theory (Aronson ,1969) & (Festinger, 1957)	Economic Neo Classical Theory of Rationality

The distinction of monetary stakes in the experiment allowed us to divide preferences of truthfulness into four categories. Table 3 reports the choices that participants made in three treatments.

Table 3. Types of behaviors in three Treatments

Types	Pattern of Lying	Percentages (Frequency)		
		Baseline Treatment	Shame Treatment	Religion Priming
Economic	HS-Lying	17.82(18)	13.86(14)	11.88(12)
	LS-Lying			
Ethical	HS-Truthful,	36.63(37)	60.39(61)	69.3(70)
	LS-Truthful			
Incomplete Lying (self-concept maintenance)	HS-Truthful	23.76(24)	16.83(17)	11.88(12)
	LS-Lying			
Incomplete Lying Opportunist	HS-Lying,	21.78(22)	8.9(9)	6.93(7)
	LS-Truthful			

\*HS-High Stake, LS-Low Stake.

In the Baseline Treatment, 17.38% respondents preferred to be deceitful in high as well as in low stake, representing economic behavior. 36.63% of senders chose to be truthful in both the stakes, thereby falling into the category of ‘Ethical’. A huge proportion of 45.54% indulged in incomplete lying, of which 23.76% senders lied in the low stake but were truthful in high stake, indicating that people do experience intrinsic cost while making a decision to lie, hence, confirming the theory of self-concept maintenance. Heterogeneous preferences for truthfulness remain prevalent in Shame Treatment and Religion Treatment. In the Shame and Religion Treatments, 60.39% and 69.3% of respondents opted to suffer economic loss by telling the truth in both stakes respectively. It is noteworthy to mention that increase in ethical types is almost twofold from baseline treatment to second and third treatment. The analysis also indicates that there is decreasing trend across the treatments in complete as well as incomplete lying. This analysis is consistent with the notion that people incur costs of lying when they are reminded about the honor code and when there is possibility of disclosure. On the other hand, this finding is inconsistent with the economic model of rationality which states that individual will always lie when monetary benefit of lying exceeds monetary cost of lying.

#### 4.1.2. Extent of Change in Preferences for truthfulness after ST and RT

The distinction of high and low stake in CTSR game allowed not only the verification of the notion of incomplete lying, but also helped study the extent of impact that shame and religion priming can exert on increasing the preference for truthfulness. The methodology depicted in table 4 demonstrates that if respondents choose to lie in both the stakes in the BL treatment, and then

changed their decision to tell the truth in both the stakes in consecutive treatments, it would mean that the treatments have complete impact. Partial impact is categorized as one when respondents change lying behavior in favor of truthfulness in one of the two stakes (high or low). Similarly, when respondents change their decision of truthfulness to lying after ST and RT, it specifies that shame and religion priming did not encourage honesty. This reverse impact can also be partial or complete, depending on whether respondents choose to change their messages under ST and RT in either one stake or both the stakes. Table 4 also allows to compare the responses in treatment 1, treatment 2 and treatment 3. For instance, if ‘Economic Man’ keeps lying in both the stakes after treatment 2 and treatment 3, it means that individual remained ‘Economic man’ throughout the experiment, irrespective of the additional priming. The same analysis could be observed for other three categories, as well.

Table 4. Extension of Personal Choice Spectrum after Introduction of Experimental Treatment

Sr. #	Treatment 1			Treatment 2		Difference between 1 & 2	Treatment 3		Difference between 1 & 3
	Stakes		Types	Stakes		Impact of Shame	Stakes		Impact of Religion
	H	L		H	L		H	L	
1	L	L	Economic Man	L	L	No Impact	L	L	No Impact
				NL	NL	Complete Impact	NL	NL	Complete Impact
				NL	L	Partial Impact	NL	L	Partial Impact
				L	NL	Partial Impact	L	NL	Partial Impact
2	NL	NL	Fully Honest	L	L	Reverse Impact	L	L	Reverse Impact
				NL	NL	No Impact	NL	NL	No Impact
				NL	L	Partial Reverse	NL	L	Partial Reverse
				L	NL	Partial Reverse	L	NL	Partial Reverse
3	NL	L	Lying but to little extent	L	L	Reverse Impact	L	L	Reverse Impact
				NL	NL	Impact	NL	NL	Impact
				NL	L	No Impact	NL	L	No Impact
				L	NL	Partial Impact	L	NL	Partial Impact
4	L	NL	Lying only when benefit is high enough	L	L	Reverse Impact	L	L	Reverse Impact
				NL	NL	Impact	NL	NL	Impact
				NL	L	Partial Impact	NL	L	Partial Impact
				L	NL	No Impact	L	NL	No Impact

\*L-Lied, N-Not Lied

Findings of table 5 and 6 are deduced using the methodology depicted in table 4. Table 5 presents the percentages of individuals who are ‘Economic’, ‘Ethical’ and ‘Partial Liars’ in the three treatments. This differentiates those individuals who did not change their preferences across the three

treatments. The findings report that almost 30% people remained ethical across the three treatments. A very small percentage of people (3%), showed economic behavior in all treatments. Whereas, 8% of people persisted with lying behavior partially.

Table 5. Behavior across three Treatments

High Stake			
Low Stake	Truth	Truth	Lie
		Ethical	Opportunist
	29%	4%	
	Lie	Upholding positive self-image	Economic
4%		3%	

Table 6 records the extent of the impact of ‘Shame’ and ‘Religion Priming’ on lying behavior. The observation illustrates that religion priming has more potential of bringing about complete change in preferences for truthfulness than shame. However, shame is simulating partial impact in preferences for truthfulness more than the religion priming. Implication of this observation is further elaborated with the results of self-concept maintenance. There is still small portion of people who started lying after going through the ST and RT. This might indicate the notion that some people do not like to be lectured or reminded about moral code, hence, out of rebellion they go against what is being pontificated to them. Hence, some people could be averse of lying out of loathe for religious reminders.

Table 6. Extent of impact of Shame and Religion Priming Percentages (frequency)

Impact	Shame	Religion Priming
Complete	27.7(28)	38.6(39)
Partial	10.8(11)	3.9(4)
No	52.4(53)	47.5(48)
Reverse	0(0)	1.9(2)
Reverse (Partial)	8.9(9)	7.9(8)

#### 4.2. Distinguishing Determinants of Truthful Behavior

We have established in our model that participants in the experiment exhibited variation in their preferences for truthfulness, hence, displaying more than two types of behavior. In this section, we expand these findings by exploring three potential sources of variation in the costs of lying. Three factors that are believed to curb dishonesty include self-concept maintenance, shame and Religion

priming. A structured mechanism is followed as suggested by Greenberg *et. al.*, (2014). Method and dynamics to identify the role of different factors in influencing preferences for truthfulness is reported in Table 7.

Table 7. Distinguishing the Determinants of Truthful Behavior

Sr. No.	Factors determining Honesty	Inclusion of	Comparison of messages from
1	Self-Concept Maintenance Low Stake -Lying High Stake-Not Lying	Separate effect of self-concept maintenance	High and low stake in (BT)
		Impact of shame is included	High and low stake in (ST)
		Impact of Religious Reinforcement is included	High and low stake in (RT)
2	Shame Lying in BT Not Lying in ST	Impact of Self-Concept Maintenance is not included	Low stakes of (BT) and (ST)
		Impact of Self-Concept Maintenance is included	High stakes of (BT) and (ST)
3	Religious Reinforcement Lying in BT/ST Not Lying in RT	Impact of Self-Concept Maintenance is not included	Low stakes of (BT) and (RT)
		Impact of Self-Concept Maintenance is included	High stakes of (BT) and (RT)

BT-Baseline Treatment, ST-Shame Treatment, RT-Religion Treatment

#### 4.2.1. Self-Concept Maintenance

The model predicts that people maintaining self-concept while reaping external benefits from lying will be truthful in high stake and will not be truthful in low stake (see, Table 7). Hence, their decision to lie is inspired by two motivations at the same time, economic motivation; gaining material rewards from lying, and psychological motivation; viewing oneself as a good human. Truthfulness inspired due to self-concept maintenance is recognized through the difference in truthfulness rate in high and low stake (see, Table 7). The experiment reveals that 60.4% of respondents are truthful in high stake and 59% respondents are truthful in low choice (see, Table 8). Sign test determines that this difference is not statistically significant ( $p= 0.4415$ )

Table 8. Self-Concept Maintenance as a determinant of Truthfulness

	Stakes (%)		Sign Test
	Low	High	p-values
Baseline Treatment	60.4	59	0.4415
Shame Treatment	77.23	69.31	0.0843
Religion Treatment	81.19	76.24	0.1796



In the shame treatment, we also test the role of Self-concept in stirring honesty. It is found that 77.23 % people sent truthful message in the high stake, and 69.31% were honest in their messages in the low stake in the shame treatment (Sign test,  $p= 0.0843$ ).

We have also attempted to test the capacity of self-concept maintenance in instigating people to opt for honest message while religious commandment is being endorsed to them. In RT, 81.19 % respondents were truthful in high stake while 76.24% of respondents were truthful in low stake (Signtest,  $p=0.1796$ ). Most pronounced impact of self-concept maintenance is in shame treatment, which indicates that people are more likely to tell the truth in high stake and tell lie in low stake when they know that other people will be able to detect whether they have been lied to or not.

It is worthy to note that here shame refers to shame without reputational concern. This shame would occur as a result of disappointing others. As receiver would know that he is being lied to, hence, if he incurs greater loss (loss in high stake), sender would feel ashamed of disappointing the receiver. As identity is not at stake, hence, sender instead of being truthful in both high and low stake, is only truthful in high stake, in order to avoid internal conflict of not disappointing others while gaining economic benefits at the same time by lying in the low stake. Thus, it is reasonable to believe that role of self-concept maintenance in rousing honesty is more prominent if the sender is made to realize that the receiver will know at the end, whether he is being lied to or not.

#### **4.2.2. Shame**

In order to find out the influence of shame in galvanizing honesty, we compared truth-telling rates of senders between the BL treatment and ST. Self-concept maintenance cannot explain any differences in truth-telling in low stake between BL treatment and ST, as respondents who are maintaining self-concept maintenance would never be truthful in low stake (see table 7). Thus, any change in truth telling could be attributed to shame alone. Hence, following this evaluation, results reveal that in the low stake, 58.42% of participants send a truthful message when their choices were not disclosed to their partners while 69.31% respondents chose to be truthful when they knew that their counterparts would be informed whether they have been lied to. Wilcoxon signed rank sum test reveals that the difference is significant with  $p=0.0482$ . (See table 9).

Now, it is interesting to note that comparison of respondents' messages in high stake between BT and ST would not capture the isolated impact of shame. Rather, this difference would capture a combined impact of self-concept maintenance and shame in instigating truthfulness going from one-

Table 9. Shame as a determinant of Truthfulness

	Stakes (%)		Wilcoxon Signed Rank Test
	Low (BT)	Low (ST)	p-value
Excluding Self-Concept Maintenance	58.42	69.31	0.0482
	High (BT)	High (ST)	p-value
Including Self-Concept Maintenance	60.40	77.23	0.0011

\*BT-Baseline Treatment, ST-Shame Treatment

treatment to another. Recall, the difference of truthfulness in high-stake between two treatments can be explained by self-concept maintenance, as in order to maintain self-concept maintenance, individual will be truthful in high-stake (see, Table 7). Our results revealed that in high stake, 60.40% people were truthful in their messages in BT and 77.23% were truthful in ST (Wilcoxon signed rank sum test=0.0011).p-value =0.0482 being greater than p value=0.0011 lends support to the notion that small effect of self-concept maintenance positively interacts with shame to promote honesty. These results are also validated by Grenberg *et. al* (2014). Their study indicates that image-motivation even without the reputational concerns is important

#### 4.2.3. Religion

The religion priming treatment facilitated us to demonstrate how effective small reminders can be in maintaining ethics and morality.

In order to determine the role of religion priming in increasing rate of truthfulness, we compared messages of sender in BT and RT.

Table 10. Religion as a determinant of Truthfulness

	Stakes (%)		Wilcoxon Signed Rank Test
	Low (BT)	Low (RT)	p-value
Excluding Self-Concept Maintenance	58.42	76.24	0.0027
	High (BT)	High (RT)	p-value
Including Self-Concept Maintenance	60.40	81.19	0.0003

\*BT-Baseline Treatment, RT-Religion Treatment

The results reveal that (see, Table 10) in the third treatment, 76.24% respondents are truthful in low stake, and 81.19% respondents are truthful in high stake. Now, if we look at these figures, it is evident that truthfulness rate in high stake is greater than truthfulness rate in low stake. Even without

comparison to BT, this result implies important conclusion. Even when people are reminded about immorality of lying, they would still indulge in incomplete lying. They will still try to reap economic benefit of lying while maintaining their positive image, i.e. they would be dishonest but not enough.

Further statistical comparison of messages in high stake between BT and RT would help us capture the combined effect of religious reinforcement and self-concept maintenance. In high stake, 60.40% respondents are truthful in BT and 81.19% respondents are truthful in RT. Wilcoxon sign rank sum test declares this difference to be highly significant with  $p=0.0003$ .

Now to see, how much of this difference in truthfulness rate could be attributed to religion alone, messages in low stake between BT and RT are compared (see, Table 7). In low stake, 58.42% of respondents are truthful in BT, and 76.24% of respondents are truthful in RT. This difference in rate of truthfulness is again professed significant by Wilcoxon sign rank sum test with  $p=0.0027$ .

It is noteworthy to mention here that increase in truthfulness rate in RT is more pronounced in high stake. This analysis deduced an implication that religious reminder itself plays significant role in curbing lying behavior. However, the positive impact of religion priming could possibly have enhanced impact when combined with relatively insignificant role of upholding positive self-image. Our evidence in the support of positive role of moral and religious reminder in curbing dishonesty is also supported by Ariely (2012).

### **4.3. Alternative Explanation**

In the CTSR game, communication through messages is crucial link between sender and receiver. The important consideration is what kind of messages are expected from sender and how would it affect the action of receiver (Crawford and Sobel, 1982). Our model is mainly interested in the responses of sender reported in the form of their message sent to the receiver. However, credibility of preferences for truthfulness also depends on the senders' belief about whether their messages will be believed by the receiver or not. For example, if sender believes that his messages will not be believed, and he also wants to gain maximum economic benefit from the game, the individual would "lie" by telling the truth, i.e. truthfulness here is not the true preference rather it is strategic move to gain financial benefit (Sutter, 2008).

To avoid this drawback of CTSR game, our model elicited senders' expectation about whether the receivers will believe senders in all three treatments. This belief elicitation allowed us to test whether a difference in the rate of truthfulness in all three treatments is explained by self-concept maintenance, shame, and religion, or by changes in outlook about whether their messages will be

followed. In BT, ST and RT, 80.20%, 86.14% and 88.12% of senders have positive expectations about their messages being followed by receivers. As professed by Friedman non parametric test, there is no statistical difference in beliefs of senders across the three treatments (P-value =0.8714)

Thus, our results on impact of self-concept maintenance, shame and religious priming cannot be explained by the differences in senders' beliefs about whether their messages will be believed or not.

## **5. Conclusions**

This study aims to analyze if people display heterogeneous of preferences for truthfulness. The paper also seeks to find out the impact 'Self-Concept Maintenance', 'Shame' and 'Religious Reinforcement' in changing the preferences for truthfulness. For this purpose, the paper studied individuals who were asked to indulge in a realistic decision-making process where they could either decide to tell the truth and incur economic costs of truthfulness, or they could decide to be deceitful and possibly suffer intrinsic costs of truthfulness.

First part of the study concludes that agents exhibit continuously heterogeneous preferences for truthfulness. Results of the experiment reveal that major portion of people fall into the category 'Ethical' and 'Partial liars', and smallest portion of respondents fall into the category of 'Economic' man. Proportion of ethical types is almost double after the introduction of 'Shame' and more than twice after 'Religious Reinforcement'.

Second section of findings reveals that although religion priming plays positive role in increasing preferences of truthfulness, there may be some people who will be averse to moral policing, and out of their loathing, will go against what is being preached to them.

Third section of results reveals that self-concept maintenance is not a modest explanation for truthful communication. However, beneficial lying (lying in low stake only) significantly explains truthful communication in shame treatment. Further results indicate that 'Shame' even without reputational concern does play role in prompting honesty in people. Further analysis reveal that combined effect of 'shame' and 'self-concept' is more significant in reducing lying rate than the shame alone, providing evidence that small effect of self-concept maintenance positively interacts with shame to endorse truthfulness. Furthermore, combined effect of self-concept maintenance and Religion is highly significant in terms of increasing truthful communication. Above all, even after controlling for self-concept maintenance, we find that religion priming has profound effects on promoting truthful communication.

It is important to note that magnifying the difference between monetary distributions in high stake and low stake in each treatment could possibly open avenue to different dynamics of incomplete lying. Moreover, strength of shame aversion could be increased in situations where identity of respondents is not kept anonymous and individuals have to live with their shame beyond the span of experiment. Our results from religion treatment highlight the avenue of exploration for future research, owing to the fact that religious reminder might differ between religions and cultures. Our research features Muslim majority, hence, limiting the generalizability of findings.

Lastly, due to time restriction and funds restriction, our analysis was conducted on sample of convenience and in one setting without time interval. Due to no time gap between the treatments, there is possibility of impact of one treatment getting translated into another, hence, infiltrating the separate impacts of each factor on preferences for truthfulness.

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### Appendix 1. Instructions to Senders

Roll Number	
Institute	
Age (in Years)	
Gender (M or F)	
Religion	
Family Income (in Rs. )/Monthly	
Academic Performance (percentage/CGPA in last examination)	
Semester	

- This is a short experiment in decision making. The experiment analysis is conducted **anonymously**. Evaluator or player that you are matched with will not know your identity. The money earned by you in this experiment will be given to you soon. Please read the instructions carefully.

- In this experiment, you are the sender of two messages. A receiver is allocated to you at random. This game gives you and Receiver an opportunity to earn points. Two payoff options are available with different monetary distributions between you and the receiver. Final monetary payoff will be determined by the option chosen by Receiver. Your role is to influence Receiver’s choice through sending message of your own choice.

- Following Two possible monetary payments in two possible payoff scenarios are available to you.

<b>HIGH STAKE</b>	
Option A: 1100 points to Sender and 1100 points to the Receiver Option B: 1500 points to Sender and 700 points to the Receiver	Circle the Message you want to send to Receiver Message 1      Message 2
<b>LOW STAKE</b>	
Option A: 550 points to Sender and 550 points to the Receiver Option B: 750 points to Sender and 350 points to the Receiver	Circle the Message you want to send to Receiver: Message 1      Message 2
Message 1: “Option A will gain you (Receiver) more money than option B.” Message 2: “Option B will gain you (Receiver) more money than option A.”	

\*30 EU (Experimental Units) =1Rs

- After receiving your message, it will be receiver’s choice to choose either option A or option B. The only information Receiver will have been the information sent by you in a message. That is, **he or she will not know the monetary payments linked with each choice.**

- **Your payoffs are determined partly by the choice of receiver and partly by the random Selection.** It will be randomly determined by the evaluator whether you and the receiver will be paid in

accordance with “High Stake” or “Low Stake”. You and the receiver might be paid off in accordance with “High Stakes” with a chance of 50% and in accordance with “Low Stake” with a chance of 50%. Evaluator will pick up randomly one of the two messages, before Sender receives your message. This means that the receiver only receives your one message, either of ‘High Stake’ or ‘Low Stake’.

- At the end of experiment, The Student you are matched with **\*will NOT know whether you lied or not**

➤ **Please make your choice for High and Low Stake carefully, since each of the two cases could be transmitted to the Receiver**

Do you expect the Receiver to follow your Message? YES      NO
---

\*not included in Treatment 2.

## Appendix 2. Instructions to Receiver

This is a short experiment in decision making. In this experiment you will be matched with another student. The money that you earn will be paid to you, privately and in cash. Two possible monetary payments are available to you and your counterpart in the experiment. The payments depend on the option chosen by you. We showed the two payment options to your counterpart. The only information you will have is the message your counterpart sends to you.

Two possible messages could be sent:

Message 1: “Option A will earn you more money than option B.”

Message 2: “Option B will earn you more money than option A.”

Your counterpart decided to send you message: \_\_\_\_\_

You will never know what sums were actually offered in the option not chosen (that is, if the message sent by your counterpart was true or not) until treatment three. Moreover, you will never know the sums your counterpart could be paid with the other option. **\*However, at the end of this treatment, you will know whether the message sent to you was true or false. Moreover, the sender knows that you are informed of his/her choice at the end of the experiment.** We will pay the two of you according to the choice you make.

I choose (please circle one):

Option A

Option B

\*included in Treatment 2



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